

## **REMARKS**

Reconsideration of the rejections and objections made in the September 26, 2008 Office action is respectfully requested based upon the amendments made above and the following comments.

### **STATUS OF CLAIMS AND SUPPORT FOR AMENDMENTS**

Upon entry of this Amendment, claims 14-16 and 18-30 will be pending in this application. Claims 1-13 and 17 have been canceled without prejudice to, or disclaimer of, their subject matter.

The amendments to claim 14 are supported by the original specification at, inter alia, page 10, lines 27-28, page 11, lines 22-23, original claim 2, and page 7, lines 8-33.

No new matter has been added.

### **WITHDRAWAL OF PREVIOUS OBJECTION AND REJECTIONS**

Applicants note with appreciation the Examiner's withdrawal of the drawing objection at paragraph 2 of the Office action dated September 26, 2008, and of the obviousness rejections mentioned in paragraphs 3-6 of that Office action.

### **CLAIM OBJECTIONS**

In paragraph 8 of the Office action dated September 26, 2008, the Examiner has objected to claims 14-30 as informal. Applicants submit that the claims, as amended, are not informal, and respectfully request that this objection be withdrawn.

### **INDEFINITENESS REJECTION**

In paragraph 8 of the Office action dated September 26, 2008, the Examiner has rejected claims 14-30 under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants respectfully traverse this rejection for the reasons given below.

Applicants respectfully submit that the claims, as amended, fully comply with the requirements of 35 U.S.C. § 112, second paragraph, because the terms objected to are no longer present in the claims. A worker skilled in this art would be able to determine whether a particular method falls within the scope of Applicants' claims. This is all that is required in order to satisfy the requirements of 35 U.S.C. § 112, second paragraph. See *In re Miller*, 169 USPQ 597 (CCPA 1971). Accordingly, this rejection should be withdrawn.

#### OBVIOUSNESS REJECTIONS

##### A. Claims 14, 17-19, and 23-25 over Baczek

In paragraph 10 of the Office action dated September 26, 2008, the Examiner has rejected claims 14, and 17-19, and 23-25 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,256,553 (Baczek). Applicants respectfully traverse this rejection as applied to the claims now of record for the reasons given below.

The Examiner's statement of rejection closely parallels that provided in the Office action dated March 27, 2008. Accordingly, Applicants incorporate by reference the remarks submitted in the response filed June 24, 2008. The remarks provided below address either new arguments or positions presented by the Examiner in the statement of the rejections, or comments made by the Examiner in paragraph 16 of the Office action dated September 26, 2008.

In addition to the statements made in the Office action dated March 27, 2008, the Examiner asserts, in the Office action dated September 26, 2008:

The leaching is carried out using an acid-bearing solution and also contains precipitated iron in the form of ferric iron and ferrous sulphate (col. 6, lines 44-64).

Office action dated September 26, 2008, page 6. Applicants respectfully submit that Baczek does not neutralize and precipitate iron during or in connection with the leaching step, but rather after the first conversion step.

In addition, removal of iron in Baczek is not by neutralization, but by crystallizing the iron out of the solution. Baczek states "Sufficient acid is added to crystallize most of the ferrous iron as solid ferrous sulfate" at column 8, lines 35-36. The Examiner has not explained why this would result in neutralization of the solution, as is recited in claim 14. Applicants respectfully submit that neutralization and crystallization are not the identical processes. For example it is possible that the amount of acid necessary to crystallize iron out of the Baczek solution would not result in neutralization of the solution. This constitutes yet another difference between Baczek and the claimed method for which the Examiner has not provided an adequate explanation of why this difference would have been obvious to those having ordinary skill in the art.

In paragraph 16 of the Office action, the Examiner states:

Applicants assert (p. 11, para 3) that nowhere does Baczek teach a concentrating step.

In response, Baczek discloses a separator 50 from which components 63 [that] can be regarded as "well soluble" are transported to a leaching step 24, while components 52 that can be regarded as "poorly soluble" are transported to a conversion step.

Office action dated September 26, 2008, page 15.

Applicants submit that Baczek clearly indicates that separator 50 is a conventional liquid-solids separator; such a device is not a concentrator as understood by those having ordinary skill in this art. Separator 50, therefore, does not perform the function of "concentrating" as this term is used in claim 14, namely,

forming two ore streams of differing concentrations with respect to a particular component from a single ore stream. Baczek states:

The slurry resulting from the reaction which takes place in reactor 46, containing partially reacted chalcopyrite concentrate, copper sulfides, primarily covellite, and ferrous iron in solution, is directed via line 48 to a separator 50. Following liquid-solids separation according to conventional techniques, the solids are directed via line 52 to a second stage conversion reactor 54.

Baczek, column 6, lines 37-43 (emphasis added). Baczek goes on to state:

Referring again to FIG. 1, following conventional liquids-solids separation in separator 50, the effluent liquor from the first stage conversion reactor 46, which liquor contains ferrous iron dissolved from the chalcopyrite, is directed via line 63 to an acid addition step 64 for the addition of make up acid via line 67.

Baczek, column 8, lines 27-28 (emphasis added). Applicants submit that the quoted portions of Baczek make clear that:

(a) process element 50 is a conventional solid-liquid separator, and not a concentrator that produces two separate ore concentrate streams, as recited in Applicants' claims;

(b) there is no copper sulfide conducted via line 63 of Baczek, because only liquor containing dissolved ferrous iron is conveyed via line 63; and

(c) no concentrating step is needed at that (or at any) point in the Baczek process because the starting point of the Baczek process is a chalcopyrite concentrate that is ground. In further support of this last point, Applicants note that Baczek states:

Referring to FIG. 1, chalcopyrite concentrate is introduced via line 10 to a grinding mill 11, preferably a stirred ball mill, wherein it is ground to a mean particle size diameter of about 1.5-5 microns, preferably about 2 microns. The particle size of the ground concentrate influences both reaction rates and completion of reaction in subsequent steps of the process. That is, the smaller the particle size, the faster and more complete the reactions.

Baczek, column 4, lines 27-35 (emphasis added).

Applicants respectfully submit that Baczek does not disclose the formation of two copper-containing concentrates from an ore stream via a concentrator, one stream containing chalcopyrite and the other stream containing copper sulfide, as recited in Applicants' claims.

Moreover, Baczek does not disclose subjecting the copper sulfide-containing stream from the concentration step to leaching, prior to a conversion that involves two conversion steps. The Examiner refers to an alleged first conversion step 46 and an alleged second conversion step 54. See Office action dated September 26, 2008 at page 15. However, alleged first conversion step 46 occurs upstream of separation 50, which the Examiner has erroneously asserted corresponds to Applicants' concentrating step. Even if the Examiner were correct in alleging that separator 50 was a concentrator (which it is not), the result would not be Applicants' claimed process because the process stream reaches separator 50 after alleged first conversion 46. By contrast, Applicants' claims recite that any conversion occur after the concentrating step (because the conversions are applied to the concentrate streams, which are formed from the concentrating step, and therefore logically cannot exist prior to the concentrating step).

The Examiner asserts that:

the use of "removing copper sulfide" includes passing the copper sulfide to another processing station as the copper sulfide is removed from the first conversion step.

Office action dated September 26, 2008, at page 17. Applicants respectfully submit that such an interpretation of the term "removing" goes beyond "giving claims their broadest reasonable interpretation." See MPEP § 2111.01(I). Nevertheless, claim

14 recites that the copper sulfide is recovered; Applicants' respectfully submit that this clearly indicates that the copper sulfide is not merely passed to another processing station, as the Examiner has asserted is encompassed by the term "removed."

The Examiner asserts:

as stated in the Office action, it would have been obvious to one of ordinary skill in the copper hydrometallurgy arts, at the time the invention was made, to return at least a part of the solution obtained from the conversion step to the leaching step for several reasons. First, the well-soluble copper sulfate solution from the leaching step is converted at 54 and at least a portion of this solution is fed to a second conversion unit 46 and on to separator 50 where at least a portion is [fed] back to the leach circuit using lines 63 and 66. Furthermore, at least a portion of the solution converted in conversion unit 54 eventually passes to either line 80 or 78 for recycling back to the leaching step. Thus, Baczek implicitly suggests recycling at least a portion of the conversion effluent back to the leaching step.

Office action dated September 26, 2008 at page 17 (emphasis added). Somehow, process element 46 of Baczek has now changed from a first conversion into a "second conversion unit." Applicants respectfully submit that element 46 cannot be both the first and second conversion unit. Either the Examiner is being inconsistent in describing the correspondence between process steps disclosed in Baczek and the process steps recited in Applicants' claims, or the Examiner has changed his description of this correspondence midway through the Office action. Either way, Applicants respectfully submit that the Examiner's statements are inappropriate.

Moreover, Baczek states that the solution in lines 63 and 66 of Figure 1 contains less than 0.1 g/L copper. See Baczek, column 8, lines 36-51. Accordingly, Applicants submit that the Examiner's statement quoted above is incorrect, and that Baczek does not disclose feeding copper solution to the leach circuit. In addition,

lines 78 and 80 of Figure 1 contain bleed electrolyte and tailings from copper electrolysis 72 and separation step 56. See Baczek, at column 9, lines 11-12 and lines 15-19. Applicants respectfully submit that the Examiner is therefore incorrect in stating that Baczek suggest, either explicitly or implicitly, recycling conversion effluent back to the leaching step.

The Examiner states:

Baczek teaches that small amounts of trace metals such as zinc are present in the conversion circuit and are removed during conversion along with precipitated iron (col. 8, lines 40-51).

Office action dated September 26, 2008 at page 18. However, such metals are removed with the iron, as the Examiner admits. Because the Examiner has taken inconsistent positions on which conversion steps allegedly disclosed in Baczek correspond to the first and second conversions recited in Applicants' claims, it is not clear whether or not the Examiner is asserting that the trace metals in Baczek are recovered in a conversion that corresponds to the second conversion step of Applicants' claims. In any case, Applicants respectfully submit that Baczek does not disclose providing such trace metals as recoverable metal sulfides, as is the case in Applicants' process.

For at least the reasons given above, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of claim 14, and that this rejection should be withdrawn as a result. Moreover, since claims 18, 19, and 23-25 depend from claim 14, Applicants respectfully submit that these claims are also not obvious over Baczek for the reasons given above with respect to claim 14.

B. Claims 15 and 30 over Baczek in view of Gabb

In paragraph 11 of the Office action dated September 26, 2008, the Examiner has rejected claims 15 and 30 under 35 U.S.C. § 103(a) as obvious over Baczek in view of U.S. Patent No. 5,616,168 (Gabb). Applicants respectfully traverse this rejection for the reasons given below and in the Response filed June 24, 2008, which is incorporated herein by reference.

Even if the Examiner arguably had properly combined the teachings of Gabb with those of Baczek, no *prima facie* case of obviousness exists because Gabb fails to cure the deficiencies of Baczek noted above with respect to claim 14. Since claims 15 and 30 each depend from claim 14, Applicants respectfully submit that these claims are also not obvious over Baczek in view of Gabb. Accordingly, the Examiner's rejection should be withdrawn.

C. Claim 16 over Baczek in view of Fisher

In paragraph 12 of the Office action dated September 26, 2008, the Examiner has rejected claim 16 under 35 U.S.C. § 103(a) as obvious over Baczek in view of U.S. Patent No. 3,827,557 (Fisher). Applicants respectfully traverse this rejection for the reasons given below.

Applicants respectfully submit that, to the extent that Fisher discloses dividing copper bearing ore into two parts, only one of those parts is processed as a concentrate; the other part is discarded. Fisher does not teach or suggest forming two copper-containing concentrates from an ore, and then processing both of them. Even if Fisher were combined with the teachings of Baczek, the failure of Baczek to disclose the concentrating step recited in Applicants' claims would not be cured. Moreover, the remaining deficiencies in Baczek noted above and in the Response filed June 24, 2008 with respect to claim 14 would not be cured by Fisher, and a



*prima facie* case of obviousness therefore does not exist. Accordingly, since claim 16 depends from claim 14, Applicants respectfully submit that claim 16 is also not obvious over Baczek in view of Fisher, and that this rejection should be withdrawn.

D. Claim 20 over Baczek in view of Richmond.

In paragraph 13 of the Office action dated September 26, 2008, the Examiner has rejected claim 20 under 35 U.S.C. § 103(a) as obvious over Baczek in view of U.S. Patent No. 6,537,440 (Richmond). Applicants respectfully traverse this rejection for the reasons given below and in the Response filed June 24, 2008, which is incorporated herein by reference.

Applicants respectfully submit that Richmond does not cure the deficiencies of Baczek noted above with respect to claim 14. Accordingly, since claim 20 depends from claim 14, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of this claim as well, and that this rejection should be withdrawn.

The Examiner states:

the disclosure of Baczek and Richmond must be balanced with respect to teaching and the expectation of benefits. Richmond teaches that for extracting copper from a mineral feed containing copper sulphide mineral (abstract) and that highest leach recoveries are often obtained by having elevated ferric/ferrous rates at the end of the leach. This is difficult to attain in an atmospheric leach as the rate of oxygen dispersion in the pulp is limited (col. 2, lines 14-21). Richmond subsequently teaches that autoclave leaching should be carried out to address the deficiencies of the prior art processes (col. 2, lines 18-21 and Abstract, feature 20 in Figure 1). Richmond taught that as a result there is a need for a process such as his which is suitable for treatment of a range of copper ores.

Office action dated September 26, 2008 at page 18.

Applicants respectfully submit that no amount of "balancing" of the teachings of Baczek and Richmond will change the fact that the Examiner's primary reference (Baczek) teaches away from the use of autoclaves because of the formation of an undesirable end product that must be removed from the system, as Applicants have previously stated. Neither Baczek nor Richmond disclose that the "difficulties" mentioned by Richmond are sufficiently problematic in a process like that of Baczek that the benefit of using an autoclave would override the additional costs involved in removing undesirable end products. If the Examiner has personal knowledge of what such a cost/benefit calculation would indicate, he can make the same of record in the form of a declaration under 37 C.F.R. § 1.104(d)(2). Applicants respectfully submit that, the mere fact that the reference that the Examiner considers closest to the claimed invention explicitly teaches away from using an autoclave indicates to any reasonable person of ordinary skill in this art that Richmond should not be combined with Baczek.

Applicants submit that, for this reason as well, the rejection should be withdrawn.

E. Claims 21 and 22 over Baczek in view of Johnson

In paragraph 14 of the Office action dated September 26, 2008, the Examiner has rejected claim 20 under 35 U.S.C. § 103(a) as obvious over Baczek in view of U.S. Patent No. 3,957,602 (Johnson). Applicants respectfully traverse this rejection for the reasons given below and in the Response filed June 24, 2008, which is incorporated herein by reference.

Applicants respectfully submit that Johnson does not cure the deficiencies of Baczek noted above with respect to claim 14. Accordingly, since claims 21 and 22

depend from claim 14, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of these claims as well, and that this rejection should be withdrawn.

In addition, the Examiner states:

Although Baczek teaches that Johnson's process requires ". . . the utilization of expensive autoclaving equipment . . ." and "generates significant amounts of excess free acids" (col. 3, lines 18-26), Johnson teaches that the reaction time is inversely proportional to temperature, the amount of time decreasing with increased temperatures (col. 2, lines 53-55).

Office action dated September 26, 2008 at pages 11-12. As with the rejection over Baczek in view of Richmond, the Examiner appears to acknowledge that his primary reference, Baczek, expressly teaches away from using an autoclave, and appears to acknowledge that Johnson will require such an autoclave. Nevertheless, the Examiner persists in combining the teachings of the references despite this clear teaching away from doing so. Applicants respectfully submit that the Examiner cannot properly dispose of the express teachings of Baczek in this way, and that the combination of references in spite of an express teaching in the primary reference away from making the combination is improper. The cases that the MPEP alleges provide support for MPEP § 2144.05 (cited by the Examiner) do not stand for the proposition that an express teaching away can be ignored when parameter ranges overlap. For this reason as well, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness, and that this rejection should be withdrawn.

F. Claims 26-29 over Baczek in view of Heimala

In paragraph 15 of the Office action dated September 26, 2008, the Examiner has rejected claim 20 under 35 U.S.C. § 103(a) as obvious over Baczek in view of

U.S. Patent No. 5,108,495 (Heimala). Applicants respectfully traverse this rejection for the reasons given below and in the Response filed June 24, 2008, which is incorporated herein by reference.

Applicants respectfully submit that Heimala does not cure the deficiencies of Baczek noted above with respect to claim 14. Accordingly, since claims 26-29 depend from claim 14, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of these claims as well, and that this rejection should be withdrawn.

#### CONCLUSION

Applicants respectfully submit that claims 14-16 and 18-30 are in condition for immediate allowance, and an early notification to that effect is respectfully requested. If the Examiner believes that further issues remain to be resolved, he is respectfully requested to contact the undersigned so that an interview may be arranged to discuss these remaining issues.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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By: 

Bruce D. Gray

Registration No. 35799

P.O. Box 1404  
Alexandria, VA 22313-1404  
703 836 6620